

## REMARKS

### Restriction Requirement

The Office Action divided the claims into two groups: Group I, claims 1-28, drawn to a method of converting hydrocarbon fuel to syngas; and Group II, claims 29-41, drawn to an apparatus for converting hydrocarbon fuel to syngas. Applicants elect, with traverse, claims 1-28. Applicants traverse because search and examination of Groups I and II together would not present an undue burden.

### Amendments

In accordance with the above election, claims 29-41 are cancelled. Accordingly, claims 1-28 are pending in the application. Reconsideration of the present application, as amended, and allowance of the pending claims is respectfully requested in view of the following remarks.

### Rejection Under 35 U.S.C. § 103

The Examiner rejected claims 1 and 5-10 under 35 U.S.C. § 103(a) as being obvious over U.S. Patent 6,221,280 to Anumakonda et al. (hereinafter "Anumakonda") in view of Dicks, *Journal of Power Sources*, vol. 61, pg 113-124 (hereinafter "Dicks"). The Examiner rejected claims 2-4 as being unpatentable over Anumakonda in view of Dicks and U.S. Patent 5,567,228 to Abdulally (hereinafter "Abdulally"). The Examiner rejected claims 11-16 as being unpatentable over Anumakonda in view of U.S. Patent 4,331,451 to Isogaya et al. (hereinafter "Isogaya") and U.S. Patent 6,103,143 to Sircar et al. (hereinafter "Sircar"). The Examiner rejected claims 17-28 as being unpatentable over Anumakonda in view of Dicks and Isogaya and Sircar. Applicants respectfully traverse these rejections.

Contrary to the examiner's assertion that the combination of the cited references discloses each element and limitation contained in independent claims 1 and 17, the element of a *pre-*

*reaction zone upstream of the catalytic reaction zone and a post-reaction zone downstream of the catalytic reaction zone* is not. More specifically, the element of *cooling the pre-reaction zone to maintain the temperature of the feed gas mixture below the flash point* is not. The Examiner mistakenly equates the *pre-reforming* of hydrocarbon fuels, as taught by Dicks, with a *pre-reaction zone*, as required by Applicants. Pre-reforming is the process of converting heavier hydrocarbons present in the feed stream prior to feeding the gas to the main reactor (Pg. 117, N[8] and accompanying text). It would not be obvious to one of skill in the art to merely reduce the temperature of the feed gas in the pre-reaction zone as required by Applicants. Accordingly, the rejections are unsupported by the prior art and must be withdrawn. Because the combined references do not teach each and every element of the claim, no *prima facie* case of obviousness has been established.

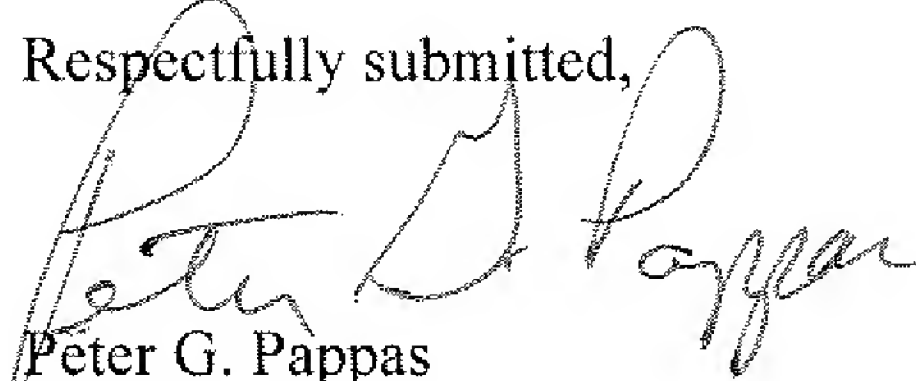
Similarly contrary to the examiner's assertion that the combination of the cited references discloses each element and limitation contained in independent claims 11 and 17, the element of *a post-reaction zone maintained at a temperature greater than about 600°C* is not. Specifically, Sircar discloses that reactor temperatures should be maintained between 400 and 500°C. Sircar further teaches against use of higher temperatures because of the increased costs of operation necessary for more expensive metallurgy to withstand the higher temperatures. Col. 4, Ln. 11-19; Col. 5, Ln. 28-32. Accordingly, the rejections are unsupported by the prior art and must be withdrawn as a case of *prima facie* obviousness is clearly lacking.

### **Conclusions**

For the foregoing reasons, Applicants submit that claims 1-28 are novel and nonobvious in view of the prior art. Allowance of the pending claims is therefore earnestly solicited.

If there are any issues which can be resolved by a telephone conference or an examiner's amendment, the Examiner is invited to telephone the attorney at (404) 853-8064.

Respectfully submitted,



Peter G. Pappas  
Reg. No. 33,205

SUTHERLAND ASBILL & BRENNAN LLP  
999 Peachtree Street, NE  
Atlanta, Georgia 30309-3996  
Telephone: (404) 853-8000  
Facsimile: (404) 853-8806